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10/591,374	08/31/2006	Mark Franklin Davis	DOL11505 US	8002
88862	7590	08/23/2010	EXAMINER	
Dolby Laboratories Inc. 999 Brannan Street San Francisco, CA 94103			BORSETTI, GREG	
			ART UNIT	PAPER NUMBER
			2626	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,374	Applicant(s) DAVIS, MARK FRANKLIN	
	Examiner GREG A. BORSETTI	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 63-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 63-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/14/2010, 7/12/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 63-74 are pending.
2. Claims 14, 4-5, 9, 15, 17-19, 22, 39-57, and 59 have been canceled.
3. The objections to the claims have been withdrawn in view of the amendments received 7/20/2010.
4. The objection to the specification has been withdrawn in view of the amendments received 7/20/2010.

Information Disclosure Statement

5. The Information Disclosure Statement (IDS) submitted on 5/14/2010 is in compliance with the provisions of 37 CFR 1.97.
6. The Information Disclosure Statement (IDS) submitted on 7/12/2010 is in compliance with the provisions of 37 CFR 1.97.
7. The IDS submitted 5/14/2010 makes up for the deficiencies of the IDS submitted 6/4/2007, therefore all references have been considered.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim(s) 63-74 is/are rejected under 35 USC 101 for being nonstatutory. One of the tests used to determine patent eligible subject matter for process claims is the

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Machine or Transformation (MoT) test where a method claim must (1) be tied to another statutory class or (2) transform underlying subject matter to a different state or thing. If no transformation occurs, the claim(s) should positively recite the other statutory class to which it is tied to qualify as a statutory process under 35 U.S.C. 101. As for guidance to areas of statutory subject matter, see 35 U.S.C. 101 Interim Guidelines (with emphasis of the Clarification of "processes" under 35 USC 101); As an example, the claim(s) could identify the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed. None of the recited method steps have or require a machine for performing the step and one of ordinary skill in the art could have performed the method without the use of a machine. Furthermore, the claims do not provide a statutory transformation.

9. Claims 63-74 are also rejected under 35 USC 101 for being solely directed to a mathematical algorithm without a practical application. The claimed spatial decoding does nothing more than manipulate the abstract audio signals. MPEP 2106.02 states "If the 'acts' of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. *Gottschalk v. Benson*, 409 U.S. 63, 71 - 72, 175 USPQ 673, 676 (1972). Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claims 63-67, 70-71, and 74 are rejected under 35 U.S.C. 102(a) as being anticipated by Faller et al. (NPL document “Binaural Cue Coding—Part II: Schemes and Applications)

As per claim 63, Faller discloses the method comprising:

a) receiving said M encoded audio channels and said set of spatial parameters, (Page 520, Fig. 1 there are M encoded audio channels through the BCC encoder and a set of spatial parameters through the side information.)

b) deriving N audio signals from said M encoded channels, wherein each audio signal is divided into a plurality of frequency bands, wherein each band comprises one or more spectral components, and (Fig. 1 shows that there are plural output channels. Also see Page 520, column 2, ...*The major difference between these techniques and BCC is, that BCC operates in subbands and is able to spatialize a number of source signals given only the respective sum signal (with the aid of side information)*... which teaches frequency band information.)

c) generating a multichannel output signal from the N audio signals and the spatial parameters, (Fig. 1 shows that there are plural output channels.)
whereby

M is two or more, (Fig. 1 shows a plurality of encoded audio channels in sum/side information.)

at least one of said N audio signals is a correlated signal derived from a weighted combination of at least two of said M encoded audio channels, (Page 525, column 2, ...*For obtaining a measure for the degree of correlation, the coherence estimates are averaged in each partition. For the averaging it is meaningful to apply a weighting function to the coherence before averaging. The weighting can be made proportional to the product of power estimates... which eliminates the denominator in (19). Since we are interested in the average degree of correlation in each partition, we average the weighted magnitude coherence in each partition and normalize it by the sum of power estimate products...*)

said set of spatial parameters includes a first parameter indicative of the amount of an uncorrelated signal to mix with a correlated signal and (Page 526, column 1, ...*The estimated inter-channel cues (BCC side information) are directly used to generate the output multichannel audio signal by applying BCC synthesis...* The side information (spatial parameters) are provided to give the correct cross-correlation cues to the mono signal to provide spatial perception for audio synthesis.)

step c) includes deriving at least one uncorrelated signal from said at least one correlated signal, and controlling the proportion of said at least one correlated signal to

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said at least one uncorrelated signal in at least one channel of said multichannel output signal in response to one or ones of said spatial parameters, wherein said controlling is at least partly in accordance with said first parameter. (Page 530, column 1,

...BCC generally provides a good quality of the spatial image using only ICLDs and ICTDs as was done in the subjective test. For recordings with a high amount of uncorrelated reverberation in the audio channels, such as classical recordings, it is desirable to also use ICC cues in order to restore the diffuseness of the reverberation. Informal listening revealed that the ICC synthesis does not only restore some of the diffuse reverberation, but also seems to improve the stability of the spatial image in many cases...)

As per claim 64, claim 63 is incorporated and Faller teaches:

wherein step c) includes deriving said at least one uncorrelated signal by applying an artificial reverberation filter to said at least one correlated signal. (Page 525, column 1, the head related transfer functions (artificial reverberation filters) are be used to synthesize binaural signals including uncorrelated signals (Page 530, column 1).)

As per claim 65, claim 63 is incorporated and Faller teaches:

wherein step c) includes deriving said at least one uncorrelated signal by applying a plurality of artificial reverberation filters to said at least one correlated signal.

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(Page 525, column 1, the head related transfer functions (artificial reverberation filters) are be used to synthesize binaural signals including uncorrelated signals (Page 530, column 1). There are a plurality of HRTF, see Fig. 8.)

As per claim 66, claim 65 is incorporated and Faller teaches:

wherein each of said plurality of artificial reverberation filters has a unique filter characteristic. (Page 525, Fig. 8, ...*As a function of the source index I_b , portions of different HRTF's are applied in different partitions...*)

As per claim 67, claim 63 is incorporated and Faller teaches:

wherein said controlling in step c) includes deriving a separate proportion of said at least one correlated signal to said at least one uncorrelated signal for each of said plurality of frequency bands, at least partly in accordance with said first parameter. (Page 525, Fig. 8, ...*As a function of the source index I_b , portions of different HRTF's are applied in different partitions...*)

As per claim 70, claim 63 is incorporated and Faller teaches:

further comprising shifting the magnitudes of spectral components in at least one of said N audio signals in response to one or ones of said spatial parameters. (Page 523, column 2, see explanation of equation 9.)

As per claim 71, claim 63 is incorporated and Faller teaches:

wherein said multichannel output signal is in the time domain. (Page 523, column 1, ...*These spectra are converted back to the time-domain resulting in the multichannel output. An FFT is used as time-frequency transform (TF)...*)

As per claim 74, claims 63 is incorporated and Faller teaches:

An apparatus comprising means adapted to carry out each of the steps of any one of the methods of claims 63 - 73. (Page 527, Fig. 10)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 68-69, and 73 are rejected under 35 U.S.C. 102(a) as being anticipated by Faller et al. (NPL document "Binaural Cue Coding—Part II: Schemes and Applications) in view of Baumgarte et al. (PGPUB #20030236583) in view of Broadie. (US Patent #5394472)

As per claim 68, claim 63 is incorporated and Faller teaches, but Baumgarte supplements:

wherein said N audio signals are derived from said M encoded audio channels

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(Fig. 1(120), ¶ 0027, shows that the stereo decoding produces L and R channels and side information further provides high frequency information.)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Baumgarte with Faller to be able to use conventional coding techniques and also provide BCC enhancement based on stereo components.

(abstract)

Faller and Baumgarte fail to specifically teach, but Broadie teaches:

wherein said N audio signals are derived from said M encoded audio channels by a process that includes dematrixing said M encoded audio channels.

(Fig. 1, column 4, lines 33-37 teach dematrixing.)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Broadie with Faller and Baumgarte because all are related to spatial audio representations and Broadie's dematrixing could have replaced the standard decoding algorithm of Faller and Baumgarte prior to BCC synthesis to provide the predictable result of a stereo signal.

As per claim 69, claim 68 is incorporated and Faller and Baumgarte fail to specifically teach, but Broadie supplements:

wherein the dematrixing operates at least partly in response to one or ones of said spatial parameters. (column 2, lines 35-44, Broadie uses spatial parameters to produce spatial information in a matrix at the receiver.)

Broadie, Faller, and Baumgarte are analogous art because all are related to spatial audio representations. Broadie further provides spatial information in a matrix process. At the time of the invention, there was a recognized problem of efficiency in producing spatial audio at a receiver (Broadie, column 2, lines 35-44). It would have been obvious to someone of ordinary skill in the art at the time of the invention to try the combination of Broadie with Faller and Baumgarte to improve efficiency of providing spatial audio at the receiver through a matrix.)

As per claim 73, claim 63 is incorporated and Faller and Baumgarte fail to specifically teach, but Broadie teaches:

wherein N is 3 or more. (Fig. 2 shows a left, right, and a mono signal provided to the decoder.)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Broadie with Faller and Baumgarte because all are related to spatial audio representations and Broadie's dematrixing could have replaced the standard decoding algorithm of Faller and Baumgarte prior to BCC synthesis to provide the predictable result of a stereo signal.

12. Claim 72 is rejected under 35 U.S.C. 102(a) as being anticipated by Faller et al. (NPL document "Binaural Cue Coding—Part II: Schemes and Applications) in view of MPEP 2144.03.

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As per claim 72, claim 63 is incorporated and Faller fails to specifically teach, however it would have been obvious to someone of ordinary skill in the art:

wherein said multichannel output signal is in the frequency domain. (Faller teaches on Page 523, column 1, ... *These spectra are converted back to the time-domain resulting in the multichannel output. An FFT is used as time-frequency transform (TF)*... Therefore, the output was in the frequency domain prior to the FFT. It would have been obvious to someone of ordinary skill in the art at the time of the invention that the FFT could have been eliminated to transmit the signal in the frequency domain to reduce processing.)

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885, (FAX: 571-270-4885). The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHMOND DORVIL can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg A. Borsetti/
Examiner, Art Unit 2626

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Supervisory Patent Examiner, Art Unit 2626